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A PILOT UNIT FOR THE DESTRUCTION OF ENERGETIC WASTES IN MOLTEN SALT

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The Lawrence Livermore National Laboratory (LLNL) is developing the Molten Salt Destruction (MSD) process as an alternative to open burning/open detonation (OB/OD) of energetic materials. The MSD development effort by LLNL is a collaboration between DOE and DoD (Office of Munitions, USDACS, US Army/ARDEC and USAF/Wrights Labs). We have successfully destroyed pure explosives, explosives formulations, liquid gun propellant (XM46), and organic non-explosive marker dyes in our laboratory-scale unit (15 cm, 61 cm tall, nominal throughput 5,500 Kg/yr). In all cases, the destruction has resulted in decomposition products primarily comprising carbon dioxide, water, and nitrogen gas. The fraction of carbon in the feed that is converted to CO is less than 1% in all cases. Similarly, the fraction of chemically bound nitrogen that is converted to NOx is well below 1% in all cases. As a result of extensive processing experience and experimentation at the bench scale, we have designed and constructed an advanced-design MSD unit with an expected capacity of ~30,000 Kg of energetic materials/year. The pilot unit was commissioned in October 1995, and a series of extended runs were performed. Following these shakedown tests, the pilot unit is to be transported to the Eglin AFB for field tests.

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